

Enclosure 1a

Instructional Materials

This enclosure contains:

- Attachment 1a-1, instructions specific to Forms A through J,
- Attachment 1a-2, a definitions section,
- Attachment 1a-3, an example of the forms filled out for a surface coating facility,
- Attachment 1a-4, a list of hazardous air pollutants (HAP), and
- Attachment 1a-5, a definition of volatile organic compounds (VOC).

Attachment 1a-1. Form-Specific Instructions

The purpose of this form is to provide some general information regarding your corporation and your individual facilities. If you are reporting for more than one facility, a separate form with a unique Facility Tracking Number (see general instructions) should be completed for each individual facility.

A-1. Facility name: Enter the legal name for this facility.

A-2. Facility address

- **Street:** The street address for the main entrance to the facility.
- **City:** The city in which the facility is located.
- **County:** The county in which the facility is located.
- **State:** The State in which the facility is located.
- **Zip code:** The 5- or 9-digit zip code for the facility location.

A-3. Corporate owner

- **Name:** The corporate owner of the facility.
- **Mailing address:** The corporate mailing address.

A-4. Technical contact

- **Name and title:** The name and title of the person (either for the corporate owner or for the individual facility) who is knowledgeable about technical information for the facility regarding emissions, control devices, coatings, and processes. This is the person that EPA will contact if questions arise in analysis of your response.
- **Mailing address:** The mailing address for the technical contact.
- **Telephone:** The telephone number of the technical contact.
- **Fax:** The facsimile number for the technical contact. You may also include an email address in this blank.

A-5. Facility description

- **No coating of plastic parts or products is performed at this facility:** Check this box only if no coating (see definitions) of PPP is performed. If you check this box, you may stop here and return a single sheet (the first page of Form A) with items **A-1** through **A-4** filled out.
- **Date of original construction of facility:** This is the year the construction for the plant in the current industry began; if the plant was converted from another industry, give year of conversion
- **SARA TRI facility ID number:** The SARA TRI facility ID number that appears on SARA Form R's. This information allows EPA to cross-reference to the TRIS database. If this facility is not required to fill-out SARA Form R, enter "N/A."
- **Number of facility employees:** The number of production personnel employed at the facility in full-time equivalents (FTE). FTE are calculated by dividing the total number of employee-hours worked at a facility by the number of hours expected from a full-time employee (typically 2,000 hours/year). See definition of FTE for an example calculation.
- **Number of facility coating employees:** Total facility production employees (expressed in FTE) involved in coating operations. If an employee's duties are split between coating and other duties, use the proportion of hours spent on the coating line to calculate FTE.
- **Dun & Bradstreet number:** The 9-character Dun & Bradstreet identifier for this facility.
- **Provide a brief description:** For the facility. Include the general purpose, types of processes that are performed at this location, products coated, and other information discussing the operations of the facility. (changes in ownership do not necessarily constitute conversions).

A-6. Product description

- **Products:** The principal product(s) coated at this facility. Use multiple copies of this page of the form (or a Form J comment sheet) to describe more than ten principal products.
- **SIC / NAICS:** These refer to the Standard Industrial Classification codes (1987) and their replacements, the North American Industrial Classification System codes. For more information on SIC and NAICS codes, visit the following Internet site:
<http://www.census.gov/epcd/www/naics.html>. Indicate which code you are reporting and provide the code for the product in the table.
- **End-use product:** Check either the "Yes" or "No" check-box if the principal product will be sold on the market as a finished good; if this product is an intermediate in the manufacture of a final product, answer "No." If the product is an "intermediate," note the part name and the final product(s) in which the intermediate product manufactured in this facility is used on a Form J comment sheet. Packaging products, such as wrappers, will be considered a finished product if they are ready to be used or filled.

A-7. Reporting year: The year of record associated with the reported information for the plant. Data for the year 1996 is expected; please provide an explanation on a Form J comment sheet to describe why another year was chosen. Also indicate whether information is being reported for the fiscal year or calendar year.

A-8. Corporate sales

- **Annual corporate sales:** For the corporation, in U.S. dollars.
- **Sales attributable to coating:** For the corporation, in U.S. dollars.

A-9. Surface coating category: Check all the boxes that apply to surface coating operations at this location. Please refer to the definitions section for details on the scope of each of the categories.

A-10. Other regulatory requirements: Please list all other MACT standards that are applicable to this facility. If there are none, enter "None." Also indicate if a LAER determination has been made for any of your coating scenarios, and if so the date of the most recent LAER determination. Please also list on a Form J comment sheet each coating scenario affected and the appropriate date.

A-11. Title V classification: Indicate if your facility has submitted or is preparing an application for a title V permit from your State or local regulatory agency. If you are not sure, check the box marked "Unknown." Also provide a brief description of the basis for determining the title V classification (for example, enter the pollutant or pollutants for which your facility is a major source) and whether or not any co-located activities at the facility influence the title V status.

A-12. Research and development (R&D) for surface coating operations

- **Are R&D activities conducted at your facility?:** R&D is defined as "research and development into new processes and products, where the R&D is operated under the close supervision of technically trained personnel and is not engaged in the manufacture of products for commercial sale in commerce, except in a *de minimis* manner." For example, R&D could include bench scale laboratory work, pilot plants, equipment testing, testing on the production line where the specific purpose of the testing is to create or improve processes and products, and the use of batch processes run for experimental purposes. Please answer

"Yes" if any activities conducted at the facility could be considered R&D, even if the activities are a small part of the total operations. If you believe the answer is "No" but are not sure, answer "Unsure (may be R&D)."

- If "yes" or "unsure," briefly and qualitatively describe the R&D activities and their purpose: Example of information you should provide here include lab scale work to develop materials for new product applications, pilot plants, product quality improvement, equipment testing, and whether the R&D is continuous or intermittent.
- Estimate HAP emissions for each R&D activity: "R&D Activity" should identify the source, such as labs, pilot plant 1, pilot plant 2, or product testing. "Emissions Estimate" should provide an estimate of HAP emissions on a per year or per hour basis (for example, tons per year or pounds per hour). "Basis for Emission Estimate" should identify the basis for the emission estimate (such as emissions calculations, stack tests, emission factors, or chemical use rates). "Emissions are Vented to:" should specify one of the following: vent to atmosphere, vent to building interior, or vent to control device. If control device, include the control device number (ref. C-1).
- If "no," are you aware of any R&D activities associated with PPP surface coating that are conducted at other locations? Briefly and qualitatively describe the R&D activities, location, and purpose: Use a Form J comment sheet for more room, if necessary. Enter "None" if you do not know of any such R&D activity.

A-13. Response summary: So we can track your complete response, indicate how many of each of the forms you completed for this facility. Note that you will need to complete the rest of the questionnaire before filling in this summary.

The purpose of the information being collected in this form is to gather information on the materials being used in the facility, whether surface coating or ancillary operation (for example, cleaning operations or surface preparation). This form has been designed to contain information for a single material or group of materials. It is intended that a copy be filled out separately for each material or group of materials reported.

Do I have to report every material I use?

The EPA is requesting that you provide information on enough materials to represent at least 90 percent of the material used in each coating scenario you define (see Form D instructions for details and examples of coating scenarios). You can report the usage for any single material, especially if you feel there is a need for the EPA to take extra consideration of "specialty" materials you use. Attaching a Form J comment sheet to the specialty materials is also appropriate.

Can I group similar materials?

You can group similar materials (for example, different color coatings with similar VOC and HAP content), and report information for the grouped materials on a single Form B. However, there are some limitations on which materials may be grouped with one another.

- All materials within a group must have a similar formulation, varying less than 5 percent in total VOC and less than 5 percent in total HAP.
- All materials within a group must have identical speciated VOC and HAP ingredients.
- Only materials of the same general type can be grouped together. For example, do not put cleaning solvents in a group with coatings or coating components.

B-1. Material identification

- Material ID number: Assign a unique code (up to 8 digits; must begin with "MN") for each material or group of materials; also, check the appropriate box for whether this form represents a single material or a group of similar materials.
- Product name: The name of the material. Brand names are acceptable.
- Supplier's name: Report the name of the manufacturer or supplier for this product.
- Supplier's stock number: Enter the stock number listed on the product package by the manufacturer or supplier.

Note: If filling out the form for a group of similar materials, attach a Form J comment sheet with the product name, supplier's name, and supplier's stock number of each material in the group.

B-2. Material usage: Amount used in the reporting year (ref. A-7). Specify units.

B-3. Material composition and formulation data, as supplied

- Source of data: Indicate the source of the data being reported in items **B-3** and **B-4**. The EPA's preference for data sources are test data first; followed by certified product sheets; material safety data sheets (MSDS); and then any other data sources available. Please provide a copy of whatever source information is available. If no good source of data is available, please be certain that you have identified the supplier and stock number adequately in item **B-1**.
- Product density (weight per volume): Enter product density, needed to convert the weight percent responses to mass units. Specify units (for example, pounds per gallon).
- Solids content: Report the solids content on a weight percent basis.
- Total VOC content: Report the VOC content on a weight percent basis. The

amount reported here should be greater than or equal to the total of all speciated VOC reported in item **B-4**. Note that this is the total VOC content on a weight percent basis, not necessarily the regulatory VOC content result of Method 24.

- Water content: Indicate the weight percent of water in the product.

B-4. Thinner added: Provide a material ID number for any thinner added to this material before it is applied. Also, specify the thinning ratio in parts thinner to parts "as supplied" coating. For example, if you add 1 part thinner to 9 parts "as supplied" coating to obtain your "as applied" coating, then your thinning ratio is 1:9.

Note: If you add a single additive to your material, you may use this blank to identify the additive, whether or not it is a thinner, as long as the material ID clearly specifies what is added to the material. If you have multiple components that are added to this material before it is applied or used, attach a Form J comment sheet with details including each material ID number and percentage of the final "as applied" material.

B-5. Speciated components, as supplied: List the individual organic constituents of the material (whether it is a HAP, VOC, or neither) and any inorganic HAP constituents. List only those constituents that are present at 1.0 percent or greater, or 0.1 percent or greater if the constituent is a carcinogen. This information should be readily available from the preferred data source (see item **B-3**) or should be attainable from the supplier of the product. For each constituent, provide the Chemical Abstract Society (CAS) registry number, list the weight percent, and indicate if the constituent is a VOC, a HAP, or both.

Note: CAS registry numbers help EPA avoid the need for another data collection effort. A good reference on the Internet for finding CAS registry numbers is ChemFinder©. (<http://chemfinder.camsoft.com/>)

Use this form to report information on the design parameters, capture and control efficiency, and monitoring performed at each control device.

Complete one form for each control device.

You may attach manufacturer's specifications, schematics, or any other drawings necessary to describe this control device and its relationship to its emission source or sources. If you decide to include extra information, please use a Form J comment sheet.

In some situations, the operating parameters (for example, control device efficiency, inlet flow rate) vary over a wide range during normal facility operations. If you believe it is important to show how the performance of this control device varies with varying operating parameters, then report the relevant information on a Form J comment sheet. Include the range over which each parameter varies and how this variation affects control device performance.

C-1. Control device information

- **Control device identification number:** Assign a unique code (up to 8 digits; must begin with "CD") for each control device.
- **Position in series of controls:** If you have multiple control devices in series, use this item to indicate where in the series of controls this particular control device is located. Attach a Form J comment sheet with a simple drawing that identifies all the control device identification numbers in the series; attach this comment sheet to the first control device in the series.
- **Provide a brief description:** Identify the general type of control device. You may also list the manufacturer, make and model number, and any other information that will be helpful in understanding the role of the control device.

C-2. Vent stream characteristics

- **Inlet flow rate:** Enter the volumetric air flow rate entering the control device during

normal operation. Indicate units used, being sure to specify actual or standard volumetric units.

- **Inlet temperature:** Enter the typical inlet temperature during normal operation. Indicate units used, and list a range of temperatures if normal operation yields a minimum and maximum temperature.
- **Inlet moisture:** List the moisture content, weight percent, of the inlet stream.

C-3. Control device efficiency: Enter the control or removal efficiency in percent for the control device. If you have speciated data defining different control device efficiencies for different pollutants, please include this data as a Form J comment sheet.

C-4. Basis for estimated control device

efficiency: Describe the basis used to determine the control device efficiency (for example, source test, manufacturer's specifications, or engineering judgement). Note that particulate matter control devices (fabric filters, electrostatic precipitators, mechanical collectors, and wet scrubbers) are assumed ineffective with regard to gaseous pollutants. They are assumed to collect particulate matter only (which may contain inorganic HAP). If you have a particulate matter control device that achieves control of gaseous pollutants, include a Form J comment sheet explaining how the additional control is achieved.

Include the following data for the following types of control devices:

- **Fabric filters:** A fabric filter removes particulate matter from a gas stream by passing the stream through a porous fabric (for example, bag filter, bag house, HEPA filter). For a fabric filter, include the total surface area of the filter (indicating units). Round off to nearest whole number.

- **Electrostatic precipitator (ESP):** An ESP removes particulate matter from a gas stream by passing the gas stream through discharge electrodes and collection plates. Most of the particulate matter becomes charged and is collected on the plates. For an ESP, include from your ash analysis the mass mean diameter of the inlet particle distribution as well as the resistivity of the particles. Also, specify the type of ESP you are operating (for example, flat plate, plate wire, or tubular).
- **Thermal or catalytic incinerators:** An incinerator is a control device which operates by thermal (non-catalytic) and catalytic incineration, oxidizing hydrocarbons and toxic pollutants into carbon dioxide and water. Temperature and residence time must be sufficient to obtain the desired oxidation results. If a catalyst is used, list the type of catalyst material (for example, palladium on ceramic honeycomb design). Also, indicate the catalyst space velocity. This is the volumetric gas rate divided by the volume of catalyst (this should be available from the manufacturer). For all incinerators, list the amount of oxygen in the inlet stream, expressed as a percentage; give the maximum percentage of moisture in the inlet emission stream, expressed as weight percent; enter each type of fuel used in the device; and indicate the actual average hourly amount of fuel consumed during the reporting year. Include units for your response. Also, indicate the minimum temperature (with units) in the combustion chamber during normal operation and specify the total maximum firing rate (with units) for all burners (based on input).
- **Mechanical collectors:** These are control devices, such as settling chambers, cyclones, and multicyclones, that utilize gravity and inertia to separate particulate matter from a gas stream. For mechanical collectors, enter the average particle density entering the control device (specifying units).
- **Carbon adsorbers:** Adsorption is a control method where gaseous pollutants are extracted from the gas phase and concentrated at the surface of a solid. Carbon is commonly used to adsorb VOC from an airstream. If an adsorbent other than carbon is used, complete this item as indicated but explain the specifics of the control device, including the adsorbent used, on a Form J comment sheet. On Form C, specify the total VOC concentration of the gas stream entering the adsorber unit in parts per million by volume (volumes of VOC per million volumes of gas stream). Provide the breakthrough capacity of adsorbent (with units). This is the capacity of the bed at which unreacted vapors begin to be exhausted. Enter the total number of carbon beds in the system, including any beds used as standby or backup. Describe the procedure used to regenerate the carbon, including disposition of recovered solvent. Also, describe any method used to capture and control emissions produced from the regeneration of the adsorbent.
- **Packed or plate column absorbers:** These are control devices where one or more selected gaseous pollutants are removed by absorption by bringing the pollutants in contact with a liquid. Packing material or plates are used to increase the surface area on which this contact occurs. Specify type of gas absorbing system used (for example, spray tower, cyclone spray chamber, packed columns, plate columns, venturi scrubber, or sparging tank). For a packed column system, this absorbing process is a continuous operation where the gas and liquid phases flow through the system in a continuous manner with intimate contact throughout. Specify packing used in your packed tower (for example, partition

tricklers, pall rings, berl saddles, or tellerettes); enter the length and diameter, with units, of the packed column. For a plate column system, this absorbing process is a staged operation on plates or trays where the liquid and gas are contacted in stepwise fashion in the vertical cylinders. Specify the distance between the plates in the absorbing tower, the length of the packed column, and the column diameter (include units). For all absorbers, specify the total inlet gas pressure (include units, and specify gage or absolute pressure). Enter the temperature at which the gas stream first changes into liquid phase. Enter the maximum gas velocity through the net column cross-sectional area. Specify what kind of liquid is used. Include the name of any additives. If the absorber is operated with recirculating slurries, specify the percentage of the liquid returned to the system. Enter the total volumetric flow rate of the liquid. Specify the amount of new liquid that must be added to the system due to evaporation or discharge to a disposal system. Specify the amount of new additive(s) that must be added to the system due to evaporation or discharge to a disposal system.

- **Wet scrubbers:** Wet scrubbers are used to separate particulate matter (sometimes gases) from an airstream. Scrubber liquids are introduced for particle collection. Specify what kind of liquid is used. Include the name of any additives. Enter the total volumetric flow rate of the liquid. Specify the amount of new liquid that must be added to the system because of evaporation or discharge to a disposal system. Specify the amount of new additive(s) that must be added to the system due to evaporation or discharge to a disposal system.
- **Condensers:** These are control devices that are used to remove organic compounds by cooling the gas stream and condensing out

the pollutants. Enter the temperature of the coolant entering the condenser. Enter the temperature of the condensed pollutant. Enter the capacity of the condenser (with units, such as joules per second).

- **Other control devices:** Any control device not discussed in this section falls under this category. Use a Form J comment sheet to provide additional information, if necessary. If applicable, indicate the type of filter media used, the collection surface area, the types of fuel used, and the maximum fuel usage rate on an hourly or annual basis. Include units, and describe any auxiliary materials (for example, lime, caustic, or acids) that are introduced into the control device.

C-5. Monitoring: Describe the monitoring performed on this control device to assure compliance with a regulatory or permit limit. Include the frequency at which the monitoring is performed, the parameter being monitored, and the averaging time (if applicable).

INSTRUCTIONS - FORM D (Coating Scenarios)

Rather than anticipate what constitutes a coating process for the wide variety of coaters in the plastic parts source category, this questionnaire is designed to gather the essential information on as many coating scenarios as you feel have unique features. It is designed to let you tell EPA why certain combinations of coatings are necessary for certain coating applications. (For example, you must use a solvent borne base coat for compatibility with a texture coat that is subsequently applied.)

Form D is built around unique coating scenarios; a coating scenario is defined by the parts coated, coating system, and application method. (Application method includes flash-off and curing.) To fill out this form, you should identify the plastic part surface coating scenarios that you have operating. See item **D-1** for more detail and an example.

Each separate coating scenario should have its own copy of the Form D. This means that each part listed on a given copy of Form D in item **D-2** can be coated with the coating system listed in item **D-3** and under the conditions described in items **D-4** through **D-6**.

These instructions refer to "critical factors," which are the characteristics of the parts, the performance requirements of the coatings, or other factors that are critical to determining which coatings are applied. For example, if you must use a high-VOC content coating in a certain coating scenario because of the characteristics of a particular plastic substrate or because of a regulatory specification, then that substrate or specification is a critical factor to the coating scenario.

Please fill out a Form J comments sheet to describe any of the following:

- Pollution prevention (P2) activities you have explored or implemented in your coatings or in their application,
- Any surface preparation or clean-up activities that occur in your plastic part coating scenarios that are significantly

different than those you described in your main survey's forms, and

- Any effects of humidity on your choice of coating scenario or on your application methods within a given coating scenario.

D-1. Provide a name for this coating scenario:

Put a descriptive name for the coating scenario in this blank. Be sure to also copy the coating scenario name into the space provided on the top of page 2 of Form D.

D-2. Provide information for each plastic part you coat in this coating scenario.

- Part name: Provide a unique name for each part you coat.
- Part description: Describe each part you coat.
- Part shape: Rate the complexity of the shapes of your parts: simple (1-4 continuous surfaces); intermediate (5-9 continuous surfaces); or complex (10 or more continuous surfaces). Put "N/A" if shape is not a critical factor.
- Longest dimension: Identify the longest dimension of each part. Include units. Put "N/A" if dimension is not a critical factor.
- Flexible or rigid?: Indicate whether the part is flexible or rigid. Put "N/A" if flexibility is not a critical factor.
- Interior or exterior?: Indicate whether the part is an interior or exterior part. Put "N/A" if interior versus exterior is not a critical factor.
- Substrate: Identify the substrate for this part. Put either "thermoset" or "thermoplastic"; OR provide the resin type in the blank provided; OR put "N/A" if substrate type is not a critical factor.

D-3. Identify your coatings, adhesives, and caulks, applied in this coating scenario.

- Material ID: Material ID must match the coating identification numbers from the Material Data forms (refer to Form B).

- Coating type: Indicate the type of coating by code:
 - A - adhesive
 - B - primer
 - C - base coat
 - D - color coat
 - E - top coat
 - F - clear coat
 - G - texture coat
 - H - EMI/RFI shielding
 - I - caulk
 - J - undercoat
 - Z - other (provide description)
- Coating technology: Indicate the coating resin technology by code:
 - A - waterborne
 - B - solventborne
 - C - high solids
 - D - powder
 - E - vapor curing
 - F - electron beam
 - G - ultraviolet
 - H - infrared
 - Z - other (provide description)
- Thickness: At what thickness is this coating applied? Include units.
- Number of coats: How many coats of this coating are applied?
- Performance specifications: What performance specifications achieved by this coating are critical factors to the coating scenario? Indicate the performance specifications by code:
 - A - red, black, or metallic color
 - B - other performance spec color
 - C - high durability
 - D - light or UV stability
 - E - flexibility
 - F - corrosion protection
 - G - stain resistance
 - H - impact resistance
 - I - solvent resistance
 - J - other chemical resistance
 - K - abrasion resistance

- L - fire resistance
- M - customer specs
- Z - other (provide description)

- Regulatory specifications: What regulatory specifications are critical factors that this coating helps you achieve? Indicate the regulatory specification by code:
 - A - DOD, CARC, or other military
 - B - FCC
 - C - FHWA
 - D - NTSB
 - E - NHTSA
 - F - potable water regulations / SDWA
 - G - FAA
 - H - FDA
 - Z - other (provide description)

D-4. Describe how the coatings are applied in this coating scenario.

- Spray booth description: Briefly describe each spray booth or other application area, using a unique name for each booth or area associated with this coating scenario.
- Conveyance: Are your parts conveyed into and out of the application area manually or by some automated method?
- Application method: Describe the application method. Indicate the application method by code:
 - A - conventional air spray
 - B - airless spray
 - C - air-assisted airless spray
 - D - high-volume low-pressure spray
 - E - flame spray
 - F - arc spray (zinc arc)
 - G - electrostatic spray
 - H - aerosol spray
 - I - electrodeposition
 - J - electroplating
 - K - electroless plating
 - L - vacuum metalizing
 - M - roll
 - N - pad
 - O - flow
 - P - brush

- Q - hot stamping
R - general paint dip
Z - other (provide description)

- Enclosure: Under what type of enclosure does this application method operate? Indicate whether the area is fully or partially enclosed (indicate 1/4, 1/2, or 3/4 enclosed). Indicate if the area is hooded or not.
- Vent: Where is the exhaust from this application area vented? Indicate if exhaust is routed to (A) the building interior, (B) the atmosphere, or (C) a control device. If exhaust is routed to a control device, provide the control device number (refer to Form C).
- PM / overspray control: How are particulate matter and/or overspray controlled in this application area? Indicate type of controls, if any (such as dry filters or waterwashes), or other procedures such as operator training.

D-5. Describe the flash-off conditions in this coating scenario.

- Flash-off area description: Briefly describe each flash-off area, using a unique name for each flash-off area associated with this coating scenario.
- Time (units): Time for flash-off. Indicate units.
- Temp (units): Temperature for flash-off. Indicate units.
- Enclosure: Under what type of enclosure does this flash-off occur? Indicate whether the area is fully or partially enclosed (indicate 1/4, 1/2, or 3/4 enclosed). Indicate if the area is hooded or not.
- Vent: Where is the exhaust from the flash-off area vented? Indicate if exhaust is routed to (A) the building interior, (B) the atmosphere, or (C) a control device. If exhaust is routed to a control device, provide the control device number (refer to Form C).

D-6. Describe the curing conditions in this coating scenario.

- Curing area description: Briefly describe each curing area, using a unique name for each curing area associated with this coating scenario.
- Time (units): Time for curing. Indicate units.
- Temp (units): Temperature for curing. Indicate units.
- Enclosure: Under what type of enclosure does this curing occur? Indicate whether the area is fully or partially enclosed (indicate 1/4, 1/2, or 3/4 enclosed). Indicate if the area is hooded or not.
- Vent: Where is the exhaust from this curing area vented? Indicate if exhaust is routed to (A) the building interior, (B) the atmosphere, or (C) a control device. If exhaust is routed to a control device, provide the control device number (refer to Form C).
- Type of curing: Indicate the type of curing, for example, drying oven, ambient air, infrared, ultraviolet, vapor curing, or electron beam curing.

INSTRUCTIONS - FORM E (Surface Preparation)

This form is designed to collect information related to the preparation of the surface of a part or product prior to the application of a surface coating. Other types of cleaning activities (for example, cleaning of the equipment used in surface coating operations) are to be reported on Form H, Cleaning Operations. Surface preparation is defined as the removal of contaminants from the surface of a substrate, or the activation or reactivation of the surface in preparation for the application of a coating.

E-1. Surface preparation operation number

- Surface preparation operation number: Assign a unique code (up to 8 digits; must begin with "SP") for each surface preparation operation.
- Name of surface preparation operation: Provide a name or brief description for the operation.
- Type of operation: Indicate each process used in this surface preparation operation. If any process other than those listed is used in surface preparation, please describe this process in the space provided.
- List all coating scenarios which use this surface preparation operation: If this surface preparation operation is associated with one or more coating scenarios, list each scenario. Each scenario listed here must be identified in item **D-1**. If one surface preparation operation exists for your entire facility, put "All Scenarios" in this item.
- Overall technology: Identify if this coating operation is water-based or solvent-based.
- General purpose: Identify if the goals of this operation are cleaning, coating adhesion, both, or other.

E-2. Equipment

- Equipment ID: Assign a unique code (up to 8 digits; must begin with "SE") for any equipment associated with this surface preparation operation.
- Equipment type: Brief description of the equipment (for example, "sand blaster").

- Process or activity: Goal of the equipment in the surface preparation operation (for example, "abrasive cleaning").
- Throughput: Indicate the hourly maximum and annual throughput of parts for this equipment.

E-3. Materials used

- Material ID: Provide the material ID for the material used in the equipment (ref. **B-1**).
- Annual amount used: List the annual average amount of this material used in the equipment.
- Amount used units: Indicate the units for the annual average amount of material used in the equipment.
- Equipment ID: Provide the equipment ID for the equipment in which this material is used (ref. **E-2**).

E-4. Emissions capture and control

- Equipment ID: Provide the equipment ID for the equipment in which this material is used (ref. **E-2**).
- Enclosure: Under what type of enclosure does the surface preparation occur? Check "enclosed and vented" only for fully enclosed areas.
- Vent: Where is the exhaust from the surface preparation operation vented? If you check "control device," please be sure to provide a control device number that corresponds to the control devices forms (ref. **C-1**).
- Enclosure capture efficiency (percent): Indicate the percent capture efficiency for any enclosure and vent that is routed to a control device.

E-5. Alternatives to solvent-based and HAP

containing materials: Answer the question on the form, giving your assessment of alternatives to these materials, if applicable.

The purpose of this form is to provide information regarding the storage of materials used in surface coating operations. Please complete one of these forms for each storage area located at your facility.

F-1. Storage area identification

- Storage area number: Assign a unique code (up to 8 digits; must begin with "ST") for each storage area.
- Storage area name: Provide a name or brief description for the storage area.

F-2. This storage area services: Indicate whether this storage area serves the entire facility or distinct coating scenarios. If not the entire facility, list all coating scenarios which use this storage area. Each scenario listed here must be identified in item **D-1**.

F-3. Method of storage: Indicate all methods used to store coatings, coating components, or other materials. If a method other than those listed is used, please describe that method. Use a Form J comment sheet if you need more space.

F-4. Storage tank parameters

- Storage tank ID: Assign a unique code (up to 5 digits; must begin with "TK") for each storage tank.
- Material stored: Indicate which material is stored in each tank, using the material identification numbers found in item **B-1**.
- Diameter (list units): Indicate the inside diameter of the storage tank, and provide units.
- Capacity (list units): Indicate the volumetric capacity of the storage tank, and provide units.
- Orientation: Specify whether the storage tank is a horizontal or vertical tank.
- Annual throughput: Indicate the annual throughput of material in this storage tank.
- Throughput units: Specify the units for the listed annual throughput.

- Location: Indicate whether the tank is indoor, outdoor, or underground.
- Temperature (include units): If the storage tank is kept at a constant temperature, check "controlled" and provide the specified temperature (with units). Otherwise, check "ambient."
- Floating roof: Check the appropriate description of this tank's floating roof; internal, external, or none.

F-5. Enclosures and vents are: Identify if the responses for items **F-6** and **F-7** pertain to the storage area as a whole or to the storage tanks only.

F-6. Enclosure: Under what type of enclosure are the materials stored? Check "enclosed and vented" only for fully enclosed areas.

F-7. Vented: Where is the exhaust from the storage area vented? If you check "control device," please be sure to provide a control device number that corresponds to the control devices forms (ref. **C-1**).

INSTRUCTIONS - FORM G (Mixing Operations)

The purpose of this form is to provide information regarding the mixing of paints for facilities with surface coating operations. Please complete one of these forms for every mixing area located at your facility.

G-1. Mixing operation identification

- Mixing operation number: Assign a unique code (up to 8 digits; must begin with "MS") for each mixing operation.
- Mixing operation name: Provide a name or brief description for the mixing operation.

G-2. This mixing operation services: Indicate whether this mixing operation serves the entire facility or distinct coating scenarios. If not the entire facility, list all coating scenarios which use this mixing operation. Each scenario listed here must be identified in item **D-1**.

G-3. Mixing equipment

- Equipment type description: Provide a brief description of the type of mixing equipment that may be found in the mixing area. For example, if there are five similar 50-gallon mixing vats and three similar 10-gallon mixing vats in the mixing operation, make two entries for this item.
- Number of this type: How many of each type of mixing equipment are located in this mixing operation?
- Capacity: Indicate the capacity of each type of equipment.
- Capacity units: Provide the units for the listed capacity.
- Emissions capture for this equipment: If emissions are captured, describe the type of capture (for example, hood, total enclosure, or room) and provide an estimated capture efficiency in percent.
- Integrated emission controls: List any emission controls that are an integral part of the equipment, such as a cover or lid.

G-4. Enclosures and vents are: Identify if the responses for items **G-6** and **G-7** pertain to the mixing area or room as a whole or to the mixing equipment only.

G-5. Enclosure: Under what type of enclosure are the materials mixed? Check "enclosed and vented" only for fully enclosed areas.

G-6. Vented: Where is the exhaust from the mixing operation vented? If you check "control device," please be sure to provide a control device number that corresponds to the control devices forms (ref. **C-1**).

INSTRUCTIONS - FORM H (Cleaning Operations)

*Plastic Parts and Products (PPP) Alternative Questionnaire
Reinforced Plastic Composites Subcategory*

This form requests information on cleaning operations not covered under surface preparation as detailed in Form E. Cleaning operations to be reported on this form include cleaning of spray booths; spray guns; mixing, storage, and dip tanks; parts not subsequently coated; and cleaning of parts or assemblies after they are coated. Do not report janitorial activities.

H-1. Cleaning operation identification

- Cleaning operation number: Assign a unique code (up to 8 digits; must begin with "EC") for each cleaning operation.
- Cleaning operation name: Provide a name or brief description for the cleaning operation.

H-2. This cleaning operation services: Indicate whether this cleaning operation serves the entire facility or distinct coating scenarios. If not the entire facility, list all coating scenarios which use this cleaning operation. Each scenario listed here must be identified in item **D-1**.

H-3. General type of cleaning operation: Choose the description that most closely matches this cleaning activity. If you choose "Parts cleaning not associated with surface preparation" or "Other," provide a brief description of the cleaning activity.

H-4. Materials used: List the material identification numbers of the cleaning materials used in this cleaning activity (ref. **B-1**). Also enter the annual usage of each cleaning material for this cleaning operation (including units).

H-5. Alternatives to solvent-based and HAP containing materials: Answer the question on the form, giving your assessment of alternatives to these materials, if applicable.

H-6. Pollution prevention housekeeping or work practice activities: Answer the question on

the form, giving your assessment of housekeeping or work practice activities, if applicable.

H-7. Rags and wipes: Answer the question on the form, indicating the fate of rags and wipes used in the cleaning operation.

H-8. Enclosure: Under what type of enclosure does this cleaning occur? Check "enclosed and vented" only for fully enclosed areas.

H-9. Vented: Where is the exhaust from the cleaning operation vented? If you check "control device," please be sure to provide a control device number that corresponds to the control devices forms (ref. **C-1**).

The purpose of this form is to provide information regarding waste and wastewater generation, treatment and disposal for facilities with surface coating operations. Report information for the entire facility on this one form.

I-1. Waste generation

- **Waste Type:** Indicate each type of waste generated at this facility. If this facility generates a type of waste other than those listed, please provide a detailed description of that waste.
Wastewater is any process waters or cleaning waters from the point or time they leave the generating operation.
Sludge waste are the solids generated from any process (for example, surface preparation, coating, or mixing) that must be disposed (whether on-site or off-site).
Waste solvents are solvents that have been used in another process (such as surface preparation) that are collected for either recycling or disposal.
Waste coatings are coating materials (such as equipment cleaning or excess prepared coating materials) that must be treated or disposed.

Note: If your facility has a combined waste stream (for example, waste coatings and waste solvents), please estimate the amount of each contributed to the waste stream before inclusion here. If necessary, attach a Form J comment sheet to further describe the combined waste stream.

- **Annual quantity of waste generated:** Give the amount of each type of waste generated in this facility.
- **Waste generated units:** Provide the units for the indicated amount of annual waste generated.
- **Is this waste treated on-site?:** Please indicate by checking yes, no, or varies.
- **Are air emissions controlled?:** Indicate if any method for controlling emissions of

HAP or VOC to the air is used. "Yes" can indicate add-on controls (specify a control device number, ref. C-1). If you have covers or lids, check "Yes" and then leave the control device number blank.

- **Sources of waste:** Identify each coating scenario that contributes waste to this waste stream.

I-2. Mode of wastewater transportation:

Indicate how wastewater is transported.

Open trench is any uncovered trench in which wastewater flows from point of generation to another point.

Open pipe is any covered trench or pipe with openings to the air at each end or through vents or manholes.

Closed pipe is any completely closed piping with no opening to the atmosphere.

Holding tank indicates a storage tank in close proximity to the point of generation which holds wastewater but does not reuse it in the process. Please indicate under holding tank termination point how and where this wastewater is disposed (for example, trucked off-site).

Use this form whenever you need to specify additional detail and do not have room on the other forms. In addition, some forms ask that a Form J comment sheet be filled out.

You can also use the Form J comment sheet to inform EPA of any additional aspects of your facility. The EPA is especially interested in learning about any pollution prevention measures you may have incorporated and any applicable standards (such as ASTM standards) in use at your facility.

J-1. These extra comments are for

- Form: Specify which form this sheet should be attached to.
- Page: Specify which page of which form this sheet should be attached to.
- Item number: Specify which item number this comment is in relation to.
- Copy: If you have multiple copies of a page of a form, indicate here which copy the comment should be attached to.

J-2. Comments: Insert your comments in the space provided. Alternatively, you can use a Form J comment sheet as a cover page for a larger attachment you wish to submit (for example, a test report or some manufacturer's written material).

Attachment 1a-2. Definitions

DEFINITIONS

The following terms are used in this alternative questionnaire. The terms shall have the meanings given for the purposes of filling out these forms.

Add-on air pollution control device (control device) - Any equipment that reduces the quantity of a pollutant that is emitted to the air. The device may destroy or secure the pollutant for subsequent recovery. Includes, but is not limited to, incinerators, carbon adsorbers, and condensers. The control device usually does not affect the process being controlled and thus is "add-on" technology as opposed to a scheme to control pollution through making some alteration to the basic process. Spray booths, transfer equipment, and ductwork are not considered in and of themselves add-on control devices.

Add-on air pollution control device efficiency (control device efficiency) - The ratio of the (pollutant) emissions recovered or destroyed by an add-on air pollution control device to the total (pollutant) emissions that are introduced to the control device, expressed as a percentage.

Adhesive - A substance capable of holding materials together by surface attachment. Adhesives are considered coatings. Various descriptive adjectives are used with the term adhesive to indicate certain characteristics: physical (liquid adhesive, tape adhesive), chemical type (silicate adhesive, resin adhesive), materials bonded (paper adhesive), and conditions of use (hot-set adhesive).

Aerosol coating - A hand held, pressurized, non-refillable container that expels an adhesive or a coating in a finely divided spray when a valve on the container is depressed.

Air-assisted airless spray - Paint spray application system using fluid pressure to atomize the paint and lower pressure air to adjust the shape of the fan pattern.

Airless spray - Paint spray application system using high fluid pressure to atomize paint by forcing it through a small orifice.

As applied - The condition of a coating at the time of application to the substrate, including any added thinning solvent. Multi-component coatings are supplied as individual components that have to be mixed prior to application.

As supplied - The condition of a coating as purchased and delivered to the user. Multi-component coatings are supplied as separate components and later mixed according to manufacturers instructions (for example, 1:3). The mixing ratio affects the pollutant emissions from the final coating product (such as the "as applied" product).

Base coat - A coat of colored material, usually opaque, that is applied before graining inks, glazing coats, or other opaque finishing materials and is usually top coated for protection.

Brush coating - Manual application of coating using brushes and rollers.

Burn off oven - A paint stripping method accomplished by combustion of the coating in gas-fired burn off ovens in which upper temperatures are controlled by injection of water spray into the oven. Often used to remove overspray from metal hooks used in spray booths.

Capture efficiency - The fraction of all organic vapors, HAP emissions, or other pollutants generated by a process that are directed to an add-on air pollution control device, expressed as a percentage.

Caulk - Material used to fill, close, or plug cracks and spaces within or between components. Caulks are considered coatings.

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Certified product data sheet (CPDS) -

Documentation furnished by coating or adhesive suppliers or an outside laboratory that provides the HAP content of a finishing material, contact adhesive, or solvent, by percent weight, measured using the EPA Method 311 or an equivalent or alternative method; the solids content of a finishing material or contact adhesive by percent weight, determined using data from the EPA Method 24, or an alternative or equivalent method; and the density, measured by EPA Method 24 or an alternative or equivalent method.

Chemical Agent Resistant Coatings (CARC) -

These polyurethane based coatings are highly crosslinked to resist chemical attack. CARC is often used on military equipment that might become contaminated by nuclear, biological, or chemical substances.

Cleaning - Removal of foreign material from a substrate.

Clean Air Act (CAA) - The Clean Air Act, as amended in November 1990, provides the foundation for EPA's efforts to improve air quality. The Clean Air Act, building on earlier legislation, was passed in 1970.

Cleaning operation - An operation involving cleaning of parts or equipment. Cleaning performed to prepare a surface for coating is not a "cleaning operation" but is instead a "surface preparation operation."

Clear coat - A transparent coating usually applied over a colored opaque coat to give improved gloss and protection to the color coat below. In some cases a clear coat simply refers to any transparent coating without regard to the substrate.

Coating - Any material that can be applied as a thin layer to a substrate and which cures to form a continuous solid film for protective, decorative,

or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealants, adhesives, caulks, maskants, and temporary protective coatings.

Coating categories:

Automobile and Light Duty Trucks -

Surface coating of automobile and light duty truck bodies at assembly plants, or other facilities and associated operations, including the mixing and storage of coatings and treatment of wastewater generated from coating operations. Offline coating of non-body parts is not included. Other HAP and/or VOC using operations at assembly plants, such as the application of adhesives and fluid fills, are included.

Fabric - This source category includes textile manufacturing processes with potential HAP emissions performed in the production or conversion of yarn and thread: woven, knit, non-woven fabric, and carpet. The processes include, but are not limited to, non-woven fabric bonding, slashing, preparation, printing, dyeing, wet finishing (including carpet back coating), coating, laminating, and spot cleaning.

Large Appliances - The surface coating of large appliances manufactured from various metals, coiled or sheet metal, precoated coil, and precut, powder-precoated pieces.

Metal Can - This source category includes facilities that coat or print metal cans or metal parts for any type of can (for example, metal ends for composite cans). It includes the coating/printing of metal sheets for subsequent processing into cans or can parts, but not the coating of metal coils for cans or can parts (coil

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coating for cans and can parts is included in the Metal Coil source category). For purposes of this data gathering effort, this source category also includes the coating/printing of metal decorative tins, crowns, and closures (except for coil coating). Note that the coating/printing of pails and drums falls in the Miscellaneous Metal Parts and Products source category.

Metal Coil - Coil manufacturing begins with a coil or roll of bare sheet metal and ends with a coil of metal coated on one or both sides.

Metal Furniture - The surface coating of furniture manufactured from various metals.

Miscellaneous Metal Parts and Products - This category encompasses all metal parts and products not covered in one of the other categories in which the surface coating of metal parts or products are included (for example, Aerospace, Automobile and Light Duty Trucks, Boat Manufacturing, Large Appliances, Metal Can, Metal Coil, Metal Furniture, or Shipbuilding).

Plastic Parts and Products - This source category covers those activities in which a coating is applied to a plastic part and is subsequently air dried, cured in an oven, or cured by radiation. A plastic part is any piece made from a substance that has been formed from resin through the application of pressure or heat or both.

Wood Building Products - This source category involves the surface coating of interior paneling produced from plywood with a hard wood surface or wood composite panels that are resurfaced using techniques such as printing that produce a decorative appearance.

Coating scenario - A combination of the parts coated, the coating system used, and the coating application method; which has one or more unique characteristics.

Coating system - The series of coating (for example, base coat followed by color coat and top coat) applied in a given coating scenario.

Coating technology - Refers to a general category of coatings based on its composition and chemistry (including, for example, contents or speciated components). Includes, but is not limited to, waterborne, solvent borne, high solids, powder, vapor curing, and radiation curing.

Color coat - A coat of colored material, usually opaque, applied to the substrate and often covered with a clear or top coat.

Conventional air spray - A paint spray application system using air at high velocity and pressure to atomize the paint. Airless and air assisted airless spray technologies are not conventional air spray because the coating is not atomized by mixing it with compressed air. Electrostatic spray technology is also not considered conventional air spray because an electrostatic charge is employed to attract the coating to the plastic part.

Curing - The process by which the coating is converted into a solid film. During curing, solvent is evaporated.

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Dip coating - The process in which a substrate is immersed in a solution (or dispersion) containing the coating material and withdrawn.

Drying (curing) oven - A chamber that uses heat to bake, cure, polymerize, or dry a wet surface coating. If the coating contains volatile solvents, the volatile portion is evaporated in the oven.

Electrodeposition (E-coating) - A dip coating application method where the paint solids are given an electrical charge which is then attracted to the part. In a method closely paralleling electroplating, paint is deposited using direct electrical current. The electrochemical reactions that occur cause water soluble resins to become insolubilized onto parts that are electrodes in the E-coating paint tank. Subsequent resin curing is required.

Electroless plating - Process of applying a film of metallic coating to plastic surfaces, involving immersion of the part in solution after pretreatment. Metallic coatings are formed as a result of a chemical reaction between the reducing agent present in the solution and metal ions. No electric currents are used, as opposed to electroplating which does use current.

Electronic beam - A method of curing coatings which uses high energy radiation to crosslink polymers.

Electroplating - Process of depositing a layer of metal onto plastic surfaces using an electric current. The plastic surface must be made conductive in order to be electrolytically plated. This is accomplished by applying a thin layer of electroless plating or by the use of substrate additives such as carbon filler.

Electrostatic spray - Method of spray application of coating where an electrostatic potential is created between the part to be coated and the paint particles.

Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) coating - Coating used to attenuate EMI/RFI signals that would otherwise pass through plastic housings.

Emission - The release or discharge, whether directly or indirectly, of HAP, VOC, or other pollutants into the ambient air.

Facility - All contiguous or adjoining property that is under common ownership or control, including properties that are separated only by a road or other public right-of-way.

Film thickness - The thickness of any applied coating measured either as wet or dry, by using film thickness gauges. Often described in units of one thousandth of an inch (0.0254 mm) thickness or one mil.

Flame (thermal) spray - Spray deposition of molten metal used to apply zinc, tin, pewter, and other metals to plastic surfaces for various functional requirements and less frequently for decorative purposes.

Flash-off area - Area within a coating facility where solvents evaporate from the coated substrate during intervals between coats or before the coated part enters a curing oven.

Flash-off time - The time required between application of successive wet-on-wet coatings or between application and baking to allow the bulk of the solvents in the coating to rise slowly and evaporate. In baked coatings flash-off helps to prevent solvent boil-off and film blistering.

Flow coating - Coating application system where paint flows over the part and the excess coating drains back into a collection system.

Flush cleaning - Removal of contaminants such as dirt, grease, oil, and coatings from a surface or coating equipment by passing solvent over, into, or through the item being cleaned. The

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solvent may simply be poured into the item being cleaned and then drained, or assisted by air or hydraulic pressure, or by pumping. Hand wipe cleaning operations are not included.

Full-time equivalents (FTE) - FTE are calculated by dividing the total number of man-hours worked at a facility by the number of hours expected from a full-time employee, typically 2,000 hours/year. The equation below demonstrates a FTE calculation:

$$\frac{400,000 \text{ man} - \text{hours}}{2,000 \text{ man} - \text{hours per FTE}} = 200 \text{ FTE}$$

Hand wipe cleaning operation - Removing contaminants such as dirt, grease, oil, and coatings by physically rubbing a surface with a material such as a rag, paper, or cotton swab that has been moistened with a cleaning solvent.

Hazardous air pollutant (HAP) - Any air pollutant listed in or pursuant to Section 112(b) of the Clean Air Act. The current list of HAP is included as Attachment 2.

High volume low pressure (HVLP) spray equipment - Spray equipment that is used to apply coating by means of a spray gun that operates at 10.0 psig of atomizing air pressure or less at the air cap.

Infrared curing - Use of infrared energy systems to dry or bake coatings applied to plastic substrates.

Lowest Achievable Emission Rate (LAER) - Pursuant to Section 171(1) of the Clean Air Act, LAER is that rate of emissions which reflects:

- (a) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of sources, unless the owner or operator of the proposed source

demonstrates that such limitations are not achievable; or

- (b) the most stringent emission limitation which is achieved in practice by such class or category of source, whichever is more stringent.

In no event, however, shall the application of this term permit a proposed new or modified source to emit any pollutant in excess of the amount allowable under applicable new source standards of performance. Areas of the country that have not attained national ambient air quality standards may require LAER on new sources of pollution.

MACT - Maximum Achievable Control Technology, as specified in Section 112 of the Clean Air Act.

Major source - Any source that emits or has the potential to emit, in the aggregate, 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAP material.

Material safety data sheet (MSDS) - The documentation required for hazardous chemicals by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910) for a solvent, cleaning material, contact adhesive, coating, or other material that identifies select reportable hazardous ingredients of the material, safety and health considerations, and handling procedures.

Metallizing - Application of a thin coating of metal to a non-metallic surface. It may be done by chemical deposition or by exposing the surface to vaporized metal in a vacuum chamber.

Mixing - Combining two or more components to create an as applied coating, such as mixing a resin and a catalyst in a two-component coating.

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Overspray - Any portion of a spray applied coating that does not land on a part and which is deposited on the surrounding surfaces.

Pad painting (printing) - Method of coating in which paint is applied to a paint pad (much like a rubber stamp) that is then pressed against a plastic substrate, transferring paint to the surface (process is often automated).

Permanent total enclosure (enclosure) - A permanently installed enclosure that completely surrounds a source of emissions, such that all emissions are captured and discharged through a control device. For specific qualifying criteria, see Method 204 (62 FR 32500; June 16, 1997).

Plastic part - A piece made from a substance that has been formed from resin through the application of pressure or heat or both.

Pollution prevention - Practices or process changes that decrease or eliminate the creation of emissions (or wastes) at the source of pollution (for example, a paint spray booth). Such prevention techniques include use of new materials, modification of equipment, and changes in work practices that result in emission reductions at the source.

Powder coating - Any coating applied as a dry (without solvent or other carrier), finely divided solid which adheres to the substrate as a continuous film when melted and fused.

Primer - The first layer and any subsequent layers of identically formulated coating applied to the surface to be coated. Primers are typically used for corrosion prevention, protection from the environment, functional fluid resistance, and adhesion of subsequent coatings. Primers that are defined as specialty coatings are not included under this definition.

Radiation cure - Method of curing or drying coatings by exposure to electromagnetic waves

or particles such as infrared (IR), ultraviolet (UV), or electron beam.

Reporting year - The fiscal or calendar year for which a facility is reporting information for its plastic coating operations. The default reporting year is 1996.

Roll coating - Method used to apply paints to raised designs or letters.

Solids - The non-volatile portion of the coating that after drying makes up the dry film.

Solvent - The liquid or blend of liquids used to dissolve or disperse the film forming particles in a coating and which evaporate during drying. A true solvent is a single liquid that can dissolve the coating. Solvents may also have non-coating uses, such as surface cleaning, equipment cleaning, and solvent bonding. Solvent is often used to describe terpenes, hydrocarbons, oxygenated compounds, furans, nitroparaffins, and chlorinated solvents.

Solvent borne - Coatings in which volatile organic compounds are the major solvent or dispersant.

Specialty coatings or materials - Coatings or materials which have unusual job performance requirements. Specialty coatings may also include, but are not limited to, coatings that in some cases the technology is not available to reformulate them with reduced volatile organic compound (VOC) content and coatings which may be used in such small quantities that reformulation would not be cost effective.

Speciated components - All constituents, organic or inorganic, that comprise a coating. Includes, but is not limited to, aliphatic solvents, amino resins, aromatic solvents, chlorinated solvents, halogenated solvents, pigment, and inhibitors.

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Spray booth - An enclosed, ventilated area used for spray painting.

Spray gun - A device that atomizes a coating or other material and projects the particulates onto a substrate.

Substrate - The surface onto which a coating or contact adhesive is applied (or into which a coating or contact adhesive is impregnated).

Surface preparation operation - The removal of contaminants from the surface of a substrate or component or the activation or reactivation of the surface in preparation for the application of a coating.

Texture coat - Coating which is applied to impart a texture to a substrate for decorative or functional purposes.

Thermoplastic - Resin capable of being repeatedly softened by heat and hardened by cooling. These materials, when heated, undergo a substantially physical rather than chemical change so they may be reground and reused. Thermoplastic resins can be completely dissolved with appropriate solvents. Typical of the thermoplastic family are the styrene polymers and copolymers, acrylics, cellulose, polyethylenes, polypropylene, vinyls, nylons, and various fluoro-carbon materials.

Thermoset - Resin that, when first cured by application of heat or chemical means, changes into a substantially infusible and insoluble material. Thermosetting resins will soften but will not dissolve in any solvents. Typical of the thermoset family are the amines (melamine and urea), most polyesters, alkyds, epoxies, and phenolics.

Thinner (thinning solvent) - A volatile liquid that is used to dilute coatings to reduce viscosity, color strength, and solids, or to modify drying

conditions. Thinners evaporate before or during the cure of a film.

Thinning (reducing) - The process of adding thinner to a coating. This liquid may be solvent, diluent, or mixtures of both.

Topcoat - A coating that is applied over a primer on a part, product, or component for appearance or protection. Topcoats are typically the last coat applied in a coating system.

Touch up and repair operation - That portion of the coating operation that is the incidental application of coating used to cover minor imperfections in the coating finish or to achieve complete coverage. This definition includes out-of-sequence or out-of-cycle coating.

Undercoat - Coating formulated and applied to substrates to provide a smooth surface for subsequent coats.

Ultraviolet (UV) curing - Use of ultraviolet energy to dry or bake coatings applied to plastic substrates.

Vacuum metallizing - Process in which surfaces are thinly coated with metal by exposing them to the vapor of metal that has been evaporated under vacuum.

Vapor curing - Method of drying or curing coatings by exposure to volatile amines. Exposure to volatile amines unblocks a urethane resin curing mechanism. The two approaches to vapor curing (vapor exposure (VC) and vapor injection (VIC)) differ in whether the paint is applied and passed into a amines environment (for example, chamber, air locks) or whether the amines vapor is injected into the paint spray stream.

Volatile organic compound (VOC) - Any compound defined as VOC in

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40 CFR 51.100(s). This includes any organic compound other than those determined by the EPA to be an exempt compound. Exempt compounds are specific organic compounds that are not considered VOC because of negligible photochemical reactivity. Exempt compounds are specified in 40 CFR 51.100(s).

Waterborne (water-reducible) coatings -

Coatings in which water is the major solvent or dispersant (contains more than 5% water by weight as applied in its volatile fraction). Solvents or dispersants include water-soluble polymers (water-reducible), water-soluble colloidal dispersions, and emulsions (including latex).

Waterwash spray booth - A spray booth in which water is used to collect overspray. Ventilation air is drawn through the water and paint overspray is captured in the water from which it can be recovered as sludge.

Work practice - Specific human activities that lead to a reduction in emissions (or waste) or have the potential to do so. The activities include operator training, management directives, work procedures, or techniques for conducting emissions (or waste) generating operations or for reducing or eliminating the need for or frequency of such operations.

Zinc arc spray - Process by which metallic zinc is applied to plastic to provide a conductive surface or shielding.

Attachment 1a-3. Reinforced Plastic Composites Example

Attachment 1a-4. List of Hazardous Air Pollutants (HAP)

Attachment 1a-5. Definition of Volatile Organic Compounds